

WHAT IS CLAIMED IS:

1. A variable-shape mirror comprising a flexible film having a plurality of electrodes and a reflective surface whose shape varies when electrostatic forces
5 are applied to the plurality of electrodes,

the plurality of electrodes being divided in a circumferential direction and in a radial direction of the flexible film, and

the flexible film having a greater number of circumferential-directional divisions in a peripheral portion thereof than in a central portion thereof.
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2. A variable-shape mirror comprising a flexible film having a plurality of electrodes and a reflective surface whose shape varies when an electrostatic force
15 is applied to the plurality of electrodes,

the flexible film having, in a peripheral region, a portion having a rigidity lower than a rigidity of remaining region of the flexible film.

3. A variable-shape mirror according to claim 2,
20 wherein the portion with the lower rigidity comprises a plurality of openings provided in the flexible film.

4. A variable-shape mirror according to claim 2,
wherein the reflective surface deforms from a flat shape, and a peripheral region of the flexible film at
25 a time of deformation has a displacement gradient varying from location to location in a direction vertical to the reflective surface when the reflective

surface is flat, and

a ratio of the portion with the lower rigidity to the location with a large displacement gradient is greater than a ratio of the portion with the lower
5 rigidity to the location with a small displacement gradient.

5. A variable-shape mirror according to claim 3, wherein the reflective surface deforms from a flat shape, and a peripheral region of the flexible film at
10 a time of deformation has a displacement gradient varying from location to location in a direction vertical to the reflective surface at a time when the reflective surface is flat, and

a ratio of the openings to the location with a
15 large displacement gradient is greater than a ratio of the openings to the location with a small displacement gradient.

6. A variable-shape mirror comprising a flexible film having a plurality of electrodes and a reflective
20 surface whose shape varies when an electrostatic force is applied to the plurality of electrodes,

the flexible film including a portion with a low rigidity in a circumferential direction thereof, and a ratio of the portion with the low rigidity varies in
25 the circumferential direction of the flexible film.

7. A variable-shape mirror comprising a flexible film having a plurality of electrodes and a reflective

surface whose shape varies when an electrostatic force is applied to the plurality of electrodes,

the flexible film including openings in a circumferential direction thereof, and a ratio of the openings varies in the circumferential direction of the flexible film.

8. A variable-shape mirror according to claim 7, wherein a diameter of each of the opening is shorter than a wavelength of light reflected by the reflective surface.

9. A variable-shape mirror comprising:
a plurality of fixed lower electrodes; and
a flexible film having a reflective surface and a plurality of upper electrodes,

the lower electrode has, in a region thereof, a plurality of openings arranged at different intervals, and

the flexible film has, in a peripheral portion thereof, a portion having a rigidity lower than a rigidity of other regions of the flexible film.

10. A variable-shape mirror according to claim 9, wherein the portion with the lower rigidity comprises a plurality of openings provided in the flexible film.

11. A method of manufacturing a variable-shape mirror, comprising:

forming first and second protection films on first and second major surfaces of a semiconductor substrate;

forming a flexible film on the first protection film;

forming a plurality of openings in the flexible film;

5 forming an electrode film on the flexible film;

forming an opening in the second major surface and the second protection film, and forming a frame by a residual portion of the semiconductor substrate.